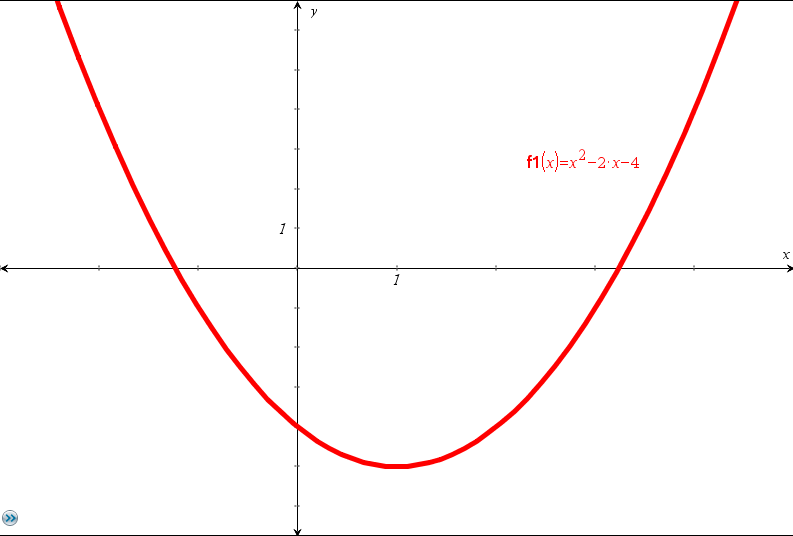
 **Name:……………….………..…………………………….**

**Unit 1 Math Methods Homework 2 Due: 23/03/2012**

1. **The height of a firework is modelled by the equation is the height of the firework and** 
   1. **Factorise the function and thus determine when, in terms a , it would land on the ground (i.e. ) if the firework was to follow this path completely.**
   2. **Making the equation equal to , solve for in terms of and**
   3. **Using the discriminant from part (b), what value must take in terms of for this height to be reached only once, (i.e. only have one solution)?**
2. **A rectangle is said to be *golden* if the ratio of its length to its width is equal to the ratio of the sum of its length and width to its length. In this case, the rectangle is golden if .**
   1. **Show that, if the rectangle is golden, then**

**A student wishes to find the value of plots the graph of and obtains the following.**

* 1. **Find the point where the graph cuts the y-axis.**
  2. **Change the function into the form , by completing the square, and state the coordinates of the turning point.**
  3. **What does this graph tell us about the *approximate* length , if the rectangle is to be golden? (i.e. from the graph analyse the approximate intercepts and which value make sense, (only has one *real-life* solution).**
  4. **Using an algebraic technique, find the exact value of**
  5. **Find a rational approximation of correct to three decimal places.**